

Claims

1. A method for a mobile unit synchronizing with a base station in a WCDMA system, said base station transmitting a signal to said mobile unit, said signal having a primary synchronization channel, a secondary synchronization channel, and a common pilot channel, comprising:
 - receiving said signal;
 - sampling said signal to generate a sample signal;
 - selecting a part of said sample signal with a first selecting way during a first period to be a first period signal;
 - obtaining a first slot timing according to said first period signal and said primary synchronization channel;
 - selecting a part of said sample signal with a second selecting way during a second period to be a second period signal;
 - obtaining a second slot timing and a slot synchronization signal according to said second period signal and said primary synchronization signal;
 - selecting a part of said sample signal with said first selecting way during a third period to be a third period signal;
 - obtaining a frame synchronization signal according to said first slot timing, said second slot timing, said slot synchronization signal, said secondary synchronization channel, and said third period signal; and
 - obtaining a scrambling-code identification signal according to said first slot timing, said second slot timing, said frame synchronization signal, and common pilot channel and said third period signal.
2. The method of claim 1, wherein said first selecting way is selectively selecting odd said sample signal and selecting even said sample signal.

3. The method of claim 1, wherein said second selecting way is selectively selecting odd said sample signal and selecting even said sample signal.
4. An apparatus for mobile unit synchronizing with a base station in a WCDMA system, said base station transmitting a signal to said mobile unit, said signal having a primary synchronization channel, a secondary synchronization channel, and a common pilot channel, comprising:
 - a receiving unit for receiving said signal;
 - a sampling unit for sampling said signal to generate a sample signal;
 - a selecting unit for selecting a part of said sample signal with a first selecting way during a first period to be a first period signal, selecting a part of said sample signal with a second selecting way during a second period to be a second period signal, selecting a part of said sample signal with said first selecting way during a third period to be a third period signal, and selecting a part of said sample signal with said second selecting way during a fourth period to be a fourth period signal;
 - a first synchronization unit for obtaining a first slot synchronization signal according to said first period signal and said primary synchronization channel, and obtaining a second slot synchronization signal according to said second period signal and said primary synchronization channel;
 - a second synchronization unit for obtaining a first frame synchronization signal according to a first slot synchronization signal, said secondary synchronization channel, and said third period signal, and obtaining a second frame synchronization signal according to a second slot synchronization signal, said secondary synchronization channel, and said fourth period signal; and
 - a third synchronization unit for obtaining a first scrambling-code identification signal according to said first frame synchronization signal, said common pilot

channel, and said third period signal.

5. The apparatus of claim 4, abandoning said first scrambling-code identification signal if said mobile unit does not synchronize with said base station, and obtaining a second scrambling-code identification signal according to said second frame synchronization signal, said common pilot channel and said fourth period signal.
6. The apparatus of claim 4, said first synchronization unit further obtaining a first slot timing according to said first period signal and said primary synchronization channel.
7. The apparatus of claim 6, said first synchronization unit further obtaining a second slot timing according to said second period signal and said primary synchronization channel.
8. The apparatus of claim 7, wherein said second synchronization unit obtains said second slot timing by referring to said first slot timing and said second slot timing.
9. The apparatus of claim 4, wherein said first selecting way is selectively selecting odd said sample signal and selecting even said sample signal.
10. The apparatus of claim 4, wherein said second selecting way is selectively selecting odd said sample signal and selecting even said sample signal.
11. An apparatus for mobile unit synchronizing with a base station in a WCDMA system, said base station transmitting a signal to said mobile unit, said signal having a primary synchronization channel, a secondary synchronization channel, and a common pilot channel, comprising:
 - a receiving unit for receiving said signal;
 - a sampling unit for sampling said signal to generate a sample signal;
 - a selecting unit for selecting a part of said sample signal with a first selecting way during a first period to be a first period signal, selecting a part of said sample signal with a second selecting way during a second period to be a second period signal, and

selecting a part of said sample signal with said first selecting way during a third period to be a third period signal;

a first synchronization unit for obtaining a first slot timing according to said first period signal and said primary synchronization channel, and obtaining a second slot timing and a slot synchronization signal according to said second period signal and said primary synchronization channel;

a second synchronization unit for obtaining a frame synchronization signal and a code-group identification according to a first slot timing, said second slot timing, said slot synchronization signal, said third period signal, and said secondary synchronization channel; and

a third synchronization unit for obtaining a scrambling-code identification signal according to said frame synchronization signal, said code identification signal, said third period signal, and said common pilot channel.

12. The method of claim 11, wherein said first selecting way is selectively selecting odd said sample signal and selecting even said sample signal.
13. The method of claim 11, wherein said second selecting way is selectively selecting odd said sample signal and selecting even said sample signal.